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The role of stress and coping strategies in the emergence of asthma, and the moderating effects of gender in this illness

Mahin Etemedi Nia[a] *, Majid Mahmood Aliloo[b], Khalil Ansarin[c]

[a]*Department of Psychology, University of Tehran, P. O. Box 14155-6456, Tehran, Iran*
[b]*Department of Psychology, University of Tabriz, Tabriz, Iran*
[c]*Department of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran*

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Abstract

It has been suggested that stress and individual's reaction to it, can play an important role in emergence, intensification and maintenance of asthma. The present study investigated the role of stress and coping strategies in the emergence of asthma and the moderating effects of gender in this illness. 40 asthmatic (20 males, 20 females) and 40 normal subjects (20 males, 20 females) participated in this study. The two groups based on demographic variables were matched. Then, they were studied by The Ways of Coping Questionnaire (WCQ), Holms-Rahe Life Stress Inventory, and General Health Questionnaire (GHQ). The results showed that the patients with asthma had higher stress rates in comparison with normal group, and they generally use problem-focused coping strategies less than normal subjects. No differences between men and women were found. It is likely, therefore, the education of appropriate reaction to stress may be effective in the prevention and treatment of asthma. Various approaches to enhance the problem-focused coping styles are discussed.

Keywords: Asthma, stress, coping strategies.

1. Introduction

Asthma is a chronic and episodic illness; Symptoms include coughing, wheezing, chest tightness, and dyspnea (Sadock & sadock, 2005). The prevalence and incidence of asthma are very high in the Western world. There is widespread concern that the prevalence of asthma is still rising in developed countries, but the economic and humanitarian effects of asthma are probably greater in the developing world, where the prevalence is also rising (Eder, Ege, & Von, 2006). Primary prevention strategies to combat the asthma epidemic are therefore urgently sought, but they must be based on a sound understanding of the various determinants of the onset of asthma (Eder et al, 2006). Asthma is greatly influenced by psychosocial factors and stress (Teiramaa, 1981; Garden & Ayres, 1993; Wainwright, Surtees, Wareham, & Harrison, 2007). Stress has been defined in many ways in the scientific literature. One of the most common psychological definitions has been that stress occurs when demands from the environment challenge an individual's adaptive capacity, or ability to cope (Cohen, 1995). Frequently termed "stressors", these demands include negative life events such as job loss, death of a loved one, and family conflict (Segerstrom &

* Mahin Etemadi Nia. Tel.: +98-914-140-6561.
E-mail address: Mahin_etemadi@yahoo.com.

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Miller, 2004). Physicians, scientists, and laypeople have long believed that stress contributes to exacerbations of asthma. However, it has only been in the past two decades that convincing scientific evidence has accumulated to substantiate this hypothesis. For example, in an 18-month prospective study of children with asthma, the experience of an acute negative life event (e.g., death of a close family member) increased the risk of a subsequent asthma attack by nearly 2-fold (Sandberg, Paton, Ahola, McGuinness, & Hillary, 2000). There appear to be individual differences in the susceptibility to even the same kind of stress; so probably, there are different behavioural and biological mediators that influence the role of stress in asthma. Coping strategies might be one of these mediators. Coping strategies refer to the specific efforts, both behavioural and psychological, that people employ to master, tolerate, reduce, or minimize stressful events. Two general coping strategies have been distinguished: problem-solving strategies are efforts to do something active to alleviate stressful circumstances, whereas emotion-focused coping strategies involve efforts to regulate the emotional consequences of stressful or potentially stressful events. Research indicates that people use both types of strategies to combat most stressful events (Folkman & Lazarus, 1980). The predominance of one type of strategy over another is determined, in part, by personal style (e.g., some people cope more actively than others) and also by the type of stressful event; for example, people typically employ problem-focused coping to deal with potential controllable problems such as work-related problems and family-related problems, whereas stressors perceived as less controllable, such as certain kinds of physical health problems, prompt more emotion-focused coping (Holahan & Moos, 1987). It is suggested that patients with asthma use different coping strategies in comparison with non-patient people (Lehrer, 1998; Barton, Clarke, Suleiman, & Abramson, 2003). Cousson-Gelief and Tay tard (1999) and Hesselink, Penninx, Schlosser, Wijnhoven, Van der Windt, Kriegsman, and van Ejik (2004) showed that the utilization of emtion-oriented strategies is an effective factor in asthma. So the education of appropriate reaction to stress may be effective in the prevention and treatment of asthma. There are various approaches to enhance the problem-focused coping styles, for example coping skill therapy, cognitive coping therapy and so on. These evidences show the need for investigating the role of stress and coping strategies in the emergence of asthma, and also we considered the moderating effects of gender factor. Accordingly, based on the aforementioned points and on the existing findings, the following hypotheses can posed for the study:

1. Asthmatic patients experience more stress in comparison with non-patient people.
2. Asthmatic patients differ significantly from their non-patient counterparts regarding emotion-focused and problem-focused coping strategies.
3. Is gender a moderating variable regarding the role of stress in the emergence of asthma?
4. Is gender a moderating variable regarding the role of emotion-focused and problem-focused coping strategies in the emergence of asthma?

2. Method

2.1. Participants and procedure

In the current study 40 asthmatic and 40 normal subjects were studied in four groups, namely: 20 male subjects with asthma (mean age, 43.45; SD= 8.6; average education years, 12 years; and 92% married); 20 non-patient male subjects (mean age, 42; SD= 9.9; average education years, 13.5 years; and 96% married); 20 female subjects with asthma (mean age, 37.4; SD= 8.2; average education years= 10 years; and 85% married); 20 non-patient female subjects (mean age, 38.7; SD= 7.69; average education years= 10 years; and 92% married). The asthmatic sample was selected by the convenience sampling method from among those who had had recourse to pulmonary clinics in Tabriz city and been diagnosed as asthmatic by the specialist. The non-patient sample was selected from among employees of the university and the patient subjects' relatives in Tabriz city. To choose these subjects General Health Questionnaire (GHQ), which measures individual's mental and physical illness record, was utilized; then the control group was matched with the patient group regarding their age and education.

2.2. Measures

2.2.1. The ways of coping questionnaire (WCQ)

The Ways of Coping Questionnaire (WCQ) is designed to identify the thoughts and actions an individual has used to cope with a specific stressful encounter. WCQ consists of 66 items. It consists of eight scales comprising 50 of the total of 66 items: (1) Confrontive coping (6 items), (2) Distancing (6 items), (3) Self-controlling (7 items), (4) Seeking Social Support (6 items), (5) Accepting Responsibility (4 items), (6) Escape–Avoidance (8 items), (7) Planful Problem Solving (6 items), and, finally, (8) Positive Reappraisal (7 items). The items are scored on a four-point Likert scale. Reliability of the original version of the WCQ in terms of internal consistency showed an acceptable value according to the manual (α=.61–.79). The inter-correlations between the scales were low to moderate (.01–.39) on average over five occasions (Folkman & Lazarus, 1988).

2.2.2. The Holmes-Rahe life stress inventory

The Holmes-Rahe Life Stress Inventory is a 43-item test designed by Holmes and Rahe to assess the stress experienced by people during a specific time (past 12-24 months). Validity and reliability reported by Rahe and Gunderson (1974) for this scale are in the order .72 and .79. The reliability of this questionnaire was estimated at .79, using test-retest method by Braheni (1993). Shah Mohammadi (2000) reported the concurrent validity of the questionnaire with the stress index .74 (Dadsetan, 2000).

2.2.3. The General Health Questionnaire (GHQ)

The GHQ (Goldberg & Hillier, 1979) is a 28-item scale designed as a general measure of health and psychopathology across four areas: somatic symptoms, anxiety and insomnia, social dysfunction and severe depression. Goldberg and Williams (1991) describe a range of scoring methods, however in this study a four-point Likert scale was used just for selecting our control group. Goldberg and Williams (1991) report validity coefficients ranging from .32 to .70 for each of the four subscales, with somatic symptoms recording the lowest validity coefficient. A test–retest reliability of .90 is reported. Reported internal consistency for this questionnaire is 85.1 (Dadsetan, 1998) and studies reveal, it possesses an acceptable validity coefficient among the Iranian population (Dadsetan, 2000).

3. Results

Mean and standard deviation scores for stress and coping strategies (problem-focused and emotion-focused) for patient, non-patient, male and female groups are shown in table 1.

Table 1. Means and standard deviations for stress and coping strategies

Variable		Group	Gender	M	SD
Stress		Patient	Male	183.75	/38 180
		Non-patient	Female	108	62/04
		Patient	Male	158/05	75/52
		Non-patient	Female	131/4	100/2
Coping strategies	Peoblem -focused	Patient	Male	23/35	9/80
		Non-patient	Female	36/35	7/18
		Patient	Male	23/55	9
		Non-patient	Female	29/25	7/52
	Emotio n-focused	Patient	Male	26/7	9/61
		Non-patient	Female	28/65	6/6
		Patient	Male	28/55	10/19
		Healthy	Female	27	7/9

For comparing stress and coping strategies (emotion-focused and problem focused) among patient and non-patient, male and female groups, two-way multivariate analysis of variance (two-way MONOVA) test is utilized. The results are shown in table 2. The result of analysis for emotion-focused coping strategy wasn't significant for any factor, so we didn't insert it in this table.

Table 2. Two-way MONOVA for stress and problem-focused coping strategy among the patient, non-patient, male and female groups

	factors	MS	df	SS	P	Sig
stress	Group (patient & non-patient)	62272.8	1	62272.8	8.792	.004
	Gender (male & female)	2205	1	2205	.311	.576
	group & gender	4590.45	1	4590.45	.648	.423
	sum	2273878	80			
Problem-focused coping	Group (patient & non-patient)	1776.61	1	1776.61	23.96	.0001
	Gender (male & female)	248.51	1	248.51	3.352	.071
	group & gender	201.61	1	201.61	2.719	.103
	sum	70079	80			

The synopsis of the results of MANOVA showed that the score of patient group in relation to stress variable is higher than non-patient group (F=8.79, P<.001); thus the first hypothesis of the study that "Asthmatic patients experience more stress in comparison with healthy people" is confirmed. The first question of the study states "Is gender a moderating variable regarding the role of stress in the emergence of asthma?" As the results show, in spite of the existing difference between patient group and non-patient group in relation to the stress experience, no results were found in support of the gender factor's moderating effect regarding the role of stress in the emergence of asthma (F=.648, P>.05). The second hypothesis is that "Asthmatic patients differ significantly from their non-patient counterparts regarding emotion-focused and problem-focused coping strategies." The results show that the two groups differ significantly in relation to problem-focused coping strategy, so that the patients gained lower scores in problem-focused strategy in comparison with healthy people (F=23.96, P<.001); but in relation to emotion-focused coping strategy, no significant difference was observed between the two groups (F=.039, P>.05). The second question of the study asks "Is gender a moderating variable regarding the role of emotion-focused and problem-focused coping strategies in the emergence of asthma?" The results show that male and female groups in relation to group factor, in using of emotion- (F=.938, P>.05) and problem-focused (F=2.719, P>.05) coping strategies do not differ significantly.

4. Discussion

The current study attempted at examining the role of stress and coping strategies in the emergence of asthma, and the moderating effects of gender factor in this illness. Hypothesis 1 was approved, indicating that "Asthmatic patients experience more stress in comparison with non-patient people." findings supported high amounts of stress among subjects with asthma, as opposed to normal subjects. This is in line with previous findings (Teiramaa, 1981; Garden & Ayres, 1993; Wainwright et al., 2007), which revealed asthma is greatly influenced by psychosocial factors and stress; also consistent with these findings, is results from Sandberg et al, (2000) who showed the experience of an acute negative life event increases the risk of a subsequent asthma attack, and Ito, et al (2002) who suggested stress was an effective factor in asthma through the facilitation of the secretion of corticoids. Therefore, according to previous studies and the current study we can conclude higher levels of stress acts both as a risk factor for the emergence of asthma, and a factor that paves the way for the aggravation of the illness. In addition, the present study sought to explore the role of gender in the levels of stress experienced in asthma with a research question. As discussed in results, no finding supported the role of gender in stress and asthma. As for the second hypothesis which assumed asthmatic patients differ significantly from their non-patient counterparts regarding emotion-focused and problem-focused coping strategies, it was found subjects with asthma are less likely to use

problem-focused coping strategy in the face of psychological problems and stressors; however, the two groups showed no difference in emotion-focused coping strategy; Barton, et al (2003) showed people with asthma tended to use different strategies for coping with stress in comparison with non-patient people, which supports the above-mentioned hypothesis and also consistent with results from Lehrer (1998) who came to regard the utilization of passive strategies an effective factor in asthma. In fact he believes using passive, as opposed to active and problem-focused strategies in the face of stresses and problems throughout the life, may cause asthma through a particular pattern of the arousal of the autonomic nervous system. Generally, it can be concluded emotion-focused style is more likely to be a determining factor in coping with life difficulties in asthmatic patients. In other words, as these people are less likely to use problem-focused strategies (notwithstanding the almost equal usage of emotion-focused strategies for solving problems in both groups) compared to normal people, it can be said solving daily problems and challenges has more to do with emotions among these people than the non-patient people. In line with this finding is finding from Hesselink (2004) who showed using emotion-oriented and avoidant strategies were related to lower health statuses among people with asthma. According to the earlier psychological investigations and the present study as a part of these researches about asthma, psychosocial stressors and individuals' reaction in facing them has a remarkable role in the emergence and intensification of asthma, so the suggestion is that in addition to the medical interferences for this illness, psychological interferences such as teaching efficient coping strategies and emotional control in face of stressors are necessary and incumbent in prevention and rehabilitation situations.

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